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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/692,769

10/24/2003

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3364P128

8946

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07/18/2007

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EXAMINER

PAUL, DISLER

ART UNIT

PAPER NUMBER

2615

MAIL DATE

DELIVERY MODE

07/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/692,769 | Applicant(s) JANG ET AL. | |
| | Examiner Disler Paul | Art Unit 2615 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-20 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/17/06; 5/16/05; 10/24/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Response to Arguments

1. Applicant's arguments, which was filed on April 27, 2007, with respect to the rejection(s) in regard to the separation of sound into background and object sounds have been considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Patchet et al. (6,826,282 B1) and Ashour et al. (US 6,459,797 B1).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,2,4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fay et al. ("US 2002/0161462 A1") and Patchet et al. ("US 6,826,282B1").

Re claim 1, Fay et al. disclose an object-based three-dimensional (3-D) audio server system comprising ("fig.2-8; page 4[0046]line 3-6:computer program in which 3-D instruction is carried out") : an audio input unit receiving object-based sound sources through various input devices ("fig.2-variety audio sources (212) being inputted to input device (204);page 5[0056]line 1-3 and 8-10") ; an audio editing and producing unit having the sound sources applied through the audio input unit into object sounds according to a user's selection ("page 1[0003] line 1-7; page 2[0024] music with

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associated character to be applied; Fig.2(204,206,224)"), and converting them into 3-D audio scene information ("page 3[0041] line 6-9-scenes changes has corresponding audio representations in a game"); and an audio encoding unit encoding 3-D information and object signals of the 3-D audio scene information converted by the audio editing and producing unit so as to transmit them through a medium("page 2[0023] line 8-11").

However, Fay et al. fail to disclose of the sound editing/producing unit separating the sources being applied through the audio input unit into object sound and background sounds according to a user's selection, but Pachet et al. disclose a system in which an audio editing/producing unit separating the sources being applied through the audio input unit into object sound and background sounds according to a user's selection ("Fig.1 (2); col.2 line 5-10; col.2 line 50-59; col.4 line 13-21; col.7/different sounds may be placed according with the different music instrument in the same scene by user") for the purpose of maintaining the consistency of music upon changing the spatial characteristic of the music. Thus, combined the teaching of Fay et al. and Pachet al. as a whole, it would have been obvious for one of the ordinary skill in the art to modify Fay et al. by incorporating the sound editing/producing unit separating the sources being applied through the audio input unit into object sound and background sounds according to a user's selection for the purpose of maintaining the consistency of music upon changing the spatial characteristic of the music.

Re claim 2, the combined teaching of Fay et al. and Pachet et al. as a whole, teach the system according to claim 1, However, the combined teaching of Fay et al. and Pachet et al. as a whole, is silent in regard to the wherein sound sources selected by the user from among the sound sources that have been applied through the audio input unit are processed into object sounds, and other sound sources not selected by the user are processed into background sounds, However, Pachet did disclose of the user with options not to removed sound sources or listener with constraint remain the same (col.4 line 35-40/unmoved sounds/listener denote background sound), thus with the above disclose sure, it is inherent that there must exist of the sound sources selected by the user from among the sound sources that have been applied through the audio input unit are processed into object sounds, and other sound sources not selected by the user are processed into background sounds.

Re claim 4, the system according to claim 1 would have further incorporate, wherein the audio editing/producing unit includes: a router/audio mixer dividing the sound sources applied in the multi-track format into a plurality of sound source objects and background Sounds ("fig.4(402,414,422 ;page 6[0069] line 9-11"));a scene editor/producer editing an audio scene and producing the edited audio scene by using 3-D information and spatial information of the sound source objects and background sound objects divided by the router/audio mixer("fig.4(416,418,448);page 6[0076] line 5-10-particular events/scene is edited/produced"); and a controller providing a user interface so that the scene editor/producer edits an audio

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scene and produces the edited audio scene under the control of a user("page 4[0052] line 5-14;fig.8").

Re claim 5, the system according to claim 1, wherein the audio encoding unit includes: a data encoding block encoding each set of data divided into background sound objects, sound source objects, and audio scene information output from the audio editing/producing unit ("page 3[0040]-encoded sound object with corresponding scene information; fig.4(204,206)"); and a multiplexer multiplexing object data of the background sound, data of the sound sources, and data of the audio scene information encoded by the data encoding block into a single signal, and transmitting the same("fig.4(440,442); page 7[0081] line 9-12-multiplex plurality of channels(440) to single (442)").

Re claim 6, the system according to claim 5 would have further incorporate the, wherein the data encoding block includes: an audio object encoder encoding the sound objects; an audio scene information encoder encoding the audio scene information; and a background sound object encoder encoding the background sounds (page 2[0024] line 7-9; page 3[0035]/sound and scene to be encoded).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fay et al.("US 2002/0161462 A1") and Patchet et al.("2002/0161462 A1") and further in view of Leung et al. ("2005/0080616 A1") and Lin et al.("20030053680 A1").

Re claim 3, the combined teaching of Fay et al. and Pachet et al. as a whole, disclose the system according to claim 1 with a single channel

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microphone with a single microphone ("page 14[0187] line 4");; However, Fay et al. and Patchet et al. as a whole, fail to disclose the audio input unit further includes: a combination of sound source input devices having: a stereo microphone with at least two microphones; a dummy head microphone whose shape is like a head of a human body; an ambisonic microphone receiving the sound sources after dividing them into signals and volume levels, each moving with a given trajectory on 3-D X, Y, and Z coordinates; and a multi-channel microphone receiving multitrack audio signals;; However, Leung et al. disclose of a system for recording three-dimensional auditory scene in which the device further include a combination of sound source input devices having: a stereo microphone with at least two microphones ("page 1[0004] line 5-6; page 1[0008] line 11-14") a dummy head whose shape is like a head of a human body ("page 1[0008]"); an ambisonic microphone receiving the sound sources after dividing them into signals and volume levels, each moving with a given trajectory on 3-D X, Y, and Z coordinates ("page 1[0005]"); and a multi-channel microphone receiving multitrack audio signals ("page 1[0008] line 3"); for the purpose of recording sound signals, thus, taking the combined teaching of Fay et al. and Patchet et al. and now Leung et al. as a whole, it would have been obvious for one of the ordinary skill in the art to modify the teaching of Fay et al. by incorporating the a stereo microphone, a dummy head microphone, an ambisonic microphone, a multi-channel microphone for the purpose of recording sound signals.

The combined teaching of Fay et al. and Patchet et al. and Leung et al. as a whole, teach the above, However, they fail to teach of the source separation/3-D information extractor separating the sound sources applied from the combination of the sound source input devices by objects, and

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extracting 3-D information. However, Lin et al. teach of a three-dimensional sound creation in which there exist the source separation/3-D information extractor separating the sound sources applied from the combination of the sound source input devices by objects, and extracting 3-D information ("page 2[0015]; fig.1(26,28)") for the purpose of matching sound signal with corresponding video object data. Thus, taking the combined teaching of Fay et al. and Obuku et al. and Leung et al. and now Lin et al. as a whole, it would have been obvious for one of the ordinary skill in the art to modify the teaching of Fay et al. and Leung et al. as a whole, by incorporating the a three-dimensional sound creation in which there exist the source separation/3-D information extractor separating the sound sources applied from the combination of the sound source input devices by objects, and extracting 3-D information for the purpose of matching sound signal with corresponding video object data as taught by Lin et al.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ashour et al. ("US 6,459,797 B1").

Re claim 7, Ashour et al. discloses a method of controlling an object-based 3-D audio server system comprising (fig.3-4; col.1 line 55-62; col.1 line 35-41/object is at varying positions): separating sound source objects from among sound sources according to a selection by a user and inputting 3-D information for each sound source object separated from the applied sound sources("col.1 line 5-10/user may designated the position with sources sound respectively being originated fig.1 (130,150)"); mixing the sound sources other than the separated sound source object into background sounds (col.3 line 25-30); and forming the sound source objects, the 3-D information , and the background sound object into an audio scene (col. 3 line 38-45; fig.3/sounds and image represented into scene, and encoding and multiplexing the audio scene to transmit the encoded and multiplexed audio signal through a medium(col. 1 line 20-30; line 52-58; fig.1)

Re claim 8, the method according to claim 7, wherein each of the sound source objects further includes 3-D information for a relative sound source object grouping the sound source objects that have to be controlled by groups (" fig.3; col.3 line 40-45; col.3 line 47-50").

Allowable Subject Matter

3. Claims 9-20 are allowed.

Re claim 9, While, Fay et al. (2002/0161462) and Ashour et al. as a whole, disclose of the audio decoding unit demultiplexing and decoding a d multiplexed audio signal including object sounds

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and background sounds and scene information applied through a medium. Neither of the inventor did disclose of the limitation of the audio scene-synthesizing the object sounds with the audio scene information decoded by the audio decoding unit into a 3-D audio scene under the control of the user.

Re claim 16, Fay et al. (2002/0161462) and Ashour et al. as a whole, fail to disclose of the performing motion processing, 3-D sound localization, and 3-D information to modify and apply the processed object sounds and 3-D information according to a user selection, and mixing them with the background sound.

Re claims, 19-20 similarly has the limitation of claims 9,16 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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